

ATOMIC ENERGY *newsletter*[®]

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
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Dear Sir:

Contract in amount of \$6,044,695 has been awarded by USAEC for construction of nuclear flight engine test facility at the reactor testing station, Idaho Falls, Idaho. Award was made to the joint venture of Howard S. Wright Construction Co., Seattle; S. Birch & Sons Construction Co., Great Falls; and D. L. Cheney, Seattle. The facility, to be constructed in the aircraft nuclear propulsion area of the testing station, will enable nuclear powered aircraft engines to be tested in conjunction with air frames, typical crew compartments, and aircraft control systems. Construction is expected to take two years; work is to get underway immediately. (Other CONTRACT NEWS, p. 2 this LETTER.)

Atlas Corp., investment company with some 40% of its assets in uranium mining firms, had record net assets of \$125,472,743 on June 30, the company reported last week. Equivalent to \$9.72 a share, this compared with \$9.50 a share a year earlier when assets were \$104,815,285. Largest individual holding of Atlas was a \$32,000,000 investment in Hidden Splendor Mining Co., followed by \$25,000,000 in Petro-Atlas Corp., and \$19,780,000 in Lisbon Uranium Corp. Stockholders were told by Floyd B. Odum, president, that the company had not taken any substantial capital profits during the year to date. (Other FINANCIAL NEWS, p. 3 this LETTER.)

New manufacturing and processing firm specializing in radioisotope compounds has been organized as Nuclear Chemical Co., with offices at 1952 W. Irving Park Rd. Chicago, Ill. The company plans to supply organic compounds labeled with radioactive carbon, phosphorous, sulfur, etc., according to Bernard Wolnak, who heads the new firm. (Other MANUFACTURING NEWS, p. 4 this LETTER.)

Application of Nuclear Power to Logistic Aircraft Systems is one of the papers scheduled to be presented at the Society of Automotive Engineers national aeronautic meeting, Sept. 30-Oct. 4, 1957, Los Angeles, Calif. Paper will be presented by R.W. Middlewood, and R. B. Ormsby..... Industrial preview of the newly-completed engineering test reactor at the national reactor testing station, Idaho Falls, Idaho is being held Oct. 2-3, 1957 by the USAEC with participation of Kaiser Engineers division of Henry J. Kaiser Co., Phillips Petroleum Co., and General Electric Co. Objectives are to point out potentials and advantages of the ETR and similar facilities. (Other MEETING, COURSES, CONFERENCES, p. 5 this LETTER.)

Appropriations bill for the USAEC, in amount of \$2,323,632,500, covering its operations in the fiscal year 1958, was signed last week by President Eisenhower. Also enacted into law by the President's signature was USAEC authorization bill allocating \$222.23 million for construction of USAEC facilities including \$19 million for reactor projects initiated by the Joint Congressional Committee on Atomic Energy, and \$129.915 million for the Commission's power demonstration reactor program. The President also signed into law measure providing for appointment of U. S. representative to new International Atomic Energy Agency; amendment requires Congressional approval of transfers of special nuclear materials made by this country to all international groups, as well as this Agency.

ATOMIC ENERGY CONTRACT NEWS...

TUBULAR FUEL ELEMENTS: Sub-contract has been given The Martin Co., Baltimore, by Phillips Petroleum Co., to furnish four tubular fuel element assemblies for the materials test reactor at the national reactor testing station, Idaho Falls, Idaho. (Phillips is prime USAEC contract operator of the MTR.) The assemblies will each contain 1000 grams of uranium dioxide; two will have natural uranium, and the other two uranium enriched with 20% uranium-235.

BOILING REACTOR FACILITY: Contract has been awarded United Engineers & Constructors, Inc., Philadelphia, by Argonne National Laboratory, Lemont, Ill., to do detailed design of a boiling reactor facility to be erected at the Laboratory's Idaho division site. Presently anticipated cost of the facility, as now planned, is about \$8.5 million. It will be used to investigate full-scale boiling water power reactor systems operating at pressures up to 2,000 pounds per square inch, and developing 200,000 kilowatts of heat under varying conditions.

AIRCRAFT CARRIER CONSTRUCTION: Negotiated contract has been given Newport News Shipbuilding & Drydock Co., Newport News, Va., by Navy's Bureau of Ships, to build U.S.'s first nuclear powered aircraft carrier. Contract calls for 85,000 ton ship; power will be furnished by eight nuclear reactors. Total cost is estimated by Navy at \$314 million. (Also disclosed by the Navy, in its announcement of construction allocations under its 1958 shipbuilding program, was assignment to naval shipyards at Portsmouth, N.H., and Mare Island, Calif., of construction of two nuclear submarine hulls; craft will be designed to fire guided missiles. A third one of the same type, which costs about \$60 million, is to be built in a private yard.) (Meanwhile, at Portsmouth, N. H., the Navy last fortnight launched the Swordfish, SSN 579, its fourth nuclear powered submarine and the first to be built in a Navy yard. She is a 2,400-ton, 257-ft., twin screw attack submarine, smaller than the Nautilus and the Seawolf, nuclear submarines which preceded her. A crew of 83 will be carried. Powerplant was built by Westinghouse Electric Corp.)

BOOKS & OTHER PUBLICATIONS...on nuclear topics...

Glossary of Terms in Nuclear Science & Technology. A work designed to provide a common language among medical men, engineers, chemists, physicists, biologists and others working with nuclear energy and associated projects. Joint effort of American Standards Assoc., and American Society of Mechanical Engineers. 181 pages. --Am. Soc. of Mech. Eng., 29 W. 39th St., New York 18. (\$5.00)

Bibliography of Research on Deuterium and Tritium Compounds. National Bureau of Standards circular 562; covers 720 published articles on properties of deuterium and tritium compounds. 51 pages. --Supt. of Documents, Wash. 25, D.C. (25¢)

Blood Volume & Cardiac Output Determinations Using Radioisotopes. Diagnosis of heart disease using radionated human serum albumin. Work done under sponsorship of U. S. Air Force (aeromedical research). 35 pages. No. PB-121984. --Office of Technical Services, Washington 25, D. C. (\$1)

Neutron & Gamma Irradiation Facilities; compiled by F. G. Minuth, J.H. Martens, Argonne National Laboratory. Descriptions of the 40 U.S. irradiation facilities either operating now or expected to go into operation soon. (26 are nuclear reactors; 14 are gamma ray facilities equipped with 3 kilocurie sources or more.) 79 pages. --Supt. of Documents, Washington 25, D. C. (60¢)

Biological Effects of Atomic Radiation. Report of committee on pathologic effects of atomic radiation. 211 pages. NRC pub. no. 542 (\$1). (Summary reports of the committee are available free.) --National Academy of Sciences-National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C.

Handbook of Radiochemical Analysis, by L.J. Beaufait, Jr., and H. R. Lukens, Jr., Tracerlab, Inc. Work done under Governmental contract in 1952 on radiochemical analysis of fission products and non-fission products. Two volumes: Vol. 1, Radiochemical techniques. 152 pages. (\$4.00). Vol. 2, Radiochemical procedures. 129 pages. (\$3.25). --Office of Technical Services, Washington 25, D. C.

PEOPLE...in atomic energy work...

John F. Floberg, Chicago, and John S. Graham, Winston-Salem, N.C., have been confirmed by the Senate as members of the USAEC. Mr. Floberg, assistant Secretary for Air, 1949-53, succeeds Thomas E. Murray in a full 5-year term. Mr. Graham, assistant Secretary of the Treasury, 1948-53, will fill out the unexpired term of the late John von Neuman, ending June 30, 1959.

ATOMIC ENERGY FINANCIAL NEWS...

URANIUM MINING FIRMS TO MERGE:- Three uranium mining companies controlled by Atlas Corp., investment trust, and two independents, are now merging into what will be one of the largest uranium mining companies in the U.S. New concern would be called Hidden Splendor Mining Co., now wholly owned by Atlas. Other Atlas properties involved are Lisbon Uranium Corp., 73% owned, and Rio de Oro Uranium Mines, Inc., in which Atlas has a 53% interest. Independents are Mountain Mesa Uranium Co., and Radorock Resources, Inc.; Atlas now holds mortgages on some of Mountain Mesa's properties. By exchange of shares in the new Hidden Splendor firm for stock held by outsiders in the other companies, Hidden Splendor would become a publicly owned corporation with more than 23,000 stockholders. Atlas still would have a majority of the approximately 8 million shares to be outstanding. Exchange proposed would offer one share of the new company for one share of present Hidden Splendor; one new share for each 12½ Rio de Oro shares; and one new share for each 60 Mountain Mesa shares. It would also offer 57/100 of a new share for each share of Lisbon, and 1/6 of a new share for one Radorock share. Floyd Odlum, president of Atlas, would be chairman of the new firm; A. P. Kibbee, now president of Lisbon Uranium Co., would be president.

FUNDS AT HAND FOR URANIUM PROCESSING MILL:- Some \$7.5 million has been advanced to Homestake-Sapin Partners, by Homestake Mining Co., and an additional credit of \$9.5 million has been set up for the partnership through the Chase Manhattan Bank of New York, according to Richard D. Bokum, 2nd, president of Sabre Pinon. (Homestake-Sapin Partners is a limited partnership of Homestake Mining Co., and Sabre Pinon Corp., to exploit ore bodies discovered by latter.) Funds of \$17 million were said by him to be adequate to build a uranium processing mill for 1,500 tons of ore per day in Valencia County, near Grants, N. M., and to advance the mining of ore bodies in McKinley County, N.M.

CHANGES IN STOCK HOLDINGS MADE: Gordon Dean, vice-president, nuclear energy, General Dynamics Corp., bought 5,000 common shares in June making direct ownership 5,150. (On July 18, 1955, Mr. Dean acquired restricted stock option for 15,000 shares of Dynamic's common stock; at the end of that month he owned 100 shares.) Joseph T. McNarney, vice-president, General Dynamics Corp., acquired 10,000 common shares through stock option, making direct ownership 10,510. Earl D. Johnson, executive vice-president, sold 8,700 common shares, reducing direct holdings to 21,500 Frederick L. Ehrman, director, Beckman Instruments, Inc., made a gift of 500 common shares and sold 2,500 reducing direct ownership to 3,365 shares.

FAST TAX WRITE-OFF GRANTED: - Allied Chemical & Dye Corp. has received fast tax-write-off certificate from Office of Defense Mobilization in amount of \$11.4 million at 80% to cover new feed materials plant at Metropolis, Ill., which company is building. Company holds USAEC contract for this project.

ATOMIC ENERGY PATENT DIGEST...latest grants...

ISSUED August 20, 1957 to PRIVATE ORGANIZATIONS:- (1) Radiation sources in charged particle accelerators. M. H. Hebb, G. C. Baldwin, inventors, respectively, of Nos. 2,803,766 and 2,803,767; assigned to General Electric Co., New York. (2) Method of recovering lithium values. L. J. Reader, inventor. No. 2,803,518 assigned to Foote Mineral Co., Philadelphia, Pa. (3) Gamma ray polymerization of unsaturated esters. J. F. Black, W. C. Hollyday, Jr., inventors, No. 2,803,598. T. S. Tutwiler, W.C. Hollyday, Jr., J.F. Black, H.R. Ertelt, inventors, No. 2,803,599. Both patents assigned to Esso Research and Engineering Co.

ISSUED August 20, 1957 to GOVERNMENTAL ORGANIZATIONS:- (1) Automatic counting apparatus, W. D. Howell, inventor. No. 2,803,405 assigned to USAEC. (2) Reactor unloading means. C.M. Cooper, inventor. No. 2,803,601 assigned to USAEC. (3) One shake gate former. R. Kalibjian, V. Perez-Mendez, inventors. No. 2,803,748 assigned to USAEC. (4) Electromagnetic apparatus for moving a rod. J. N. Young, inventor. No. 2,803,761 assigned to USAEC.

ISSUED August 27, 1957 to PRIVATE ORGANIZATIONS:- (1) Production of beryllium fluoride. S. J. Morana, G. F. Simons, inventors. No. 2,804,372 assigned to The Beryllium Corp., Reading, Pa.

NOTES:- License under patent 2,781,054 covering self-operating check valve is offered by General Electric Co., Schenectady 5, N.Y. Inquiries should be directed to patent counsel, atomic products division.

PRODUCTS, PROCESSES, SERVICES...

NEW PRODUCTS:- New transistorized radiological survey meter, model no. UAC 408, is designed for personnel protection and monitoring of alpha and beta radiation dosage, spillage, and contamination. Detecting element is a thin end mica window halogen-quenched GM tube. Three sensitivity ranges are provided with maximum values of 0.5 mr/hr; 5.0 mr/hr; and 50 mr/hr. --Universal Atomics div., Universal Transistor Products Corp., 143 E. 49th St., New York 17.

New high density casting compound, trade-named Maraset 341, is a lead-filled epoxy formulation with applications as shielding material in nuclear installations. Lead loadings to 95% are possible, manufacturer states. --The Marblette Corp., Long Island City, N.Y.

PRODUCT SHIPMENTS:- Delivery has recently been made by Radiation Counter Laboratories, Inc., Skokie, Ill., of 1024-channel neutron time-of-flight analyzer to Saclay Laboratories of the French Atomic Energy Commission. The instrument, first of this type to be produced commercially in the U.S., measures neutron energy by determining the time it takes a neutron to travel from a reactor to a distant detector.

Tracerlab, Inc., Boston nucleonics firm, is completing shipment of a large order of radiation protection devices to be used by personnel of the French Atomic Energy Commission at its various installations. (The company recently announced that it would raise prices by 10% on selected items in its line.)

Thirty kilograms of uranium enriched to 20% by 6 kilograms of uranium-235, valued at \$150,000, was shipped by the USAEC to the W. German government last week. The fuel, in the shape of rods, was designed and fabricated by Babcock & Wilcox Co. It will be installed in a swimming-pool research reactor built by AMF Atomics, Inc., for the nuclear research center of the Technische Hochschule Muenchen.

SERVICES:- Irradiation facilities of the NRX reactor of Atomic Energy of Canada, Ltd., now being offered on a commercial scale, include a variety of flux levels. Offering the highest flux, are x-rod positions, which are unoccupied fuel-rod positions, where space up to 2-1/8-in. in diameter and length of 10 1/2-feet, is available. For small targets, the x-rod tray positions are available; these are subdivided x-rods, holding material sealed in an aluminum capsule. Self-serve positions, with lower flux, are principally used for production of radiosotopes requiring short irradiations; target material is encapsulated in a manner similar to that of the x-rod tray position. For long-term irradiations, such as production of cobalt-60 slugs with specific activity under 3 curies per gram, the j-rod positions are used. For irradiation of materials too large for the other facilities, a series of 4" and 12"-diameter holes, which extend through the graphite reflector to the outer face of the calandria, may be used. A gamma irradiation facility, at the reactor facility, is provided by the intense gamma field from the depleted fuel rods during their cooling-off period in the "trench" there. Two tiers of fuel rods are spaced to accommodate samples up to 6x15x18-in. Samples to be irradiated are sealed in a water tight box and lowered into this irradiation space.

INTERNATIONAL ATOMIC ENERGY NEWS...

UNITED KINGDOM:- Initial phase of a study of thorium as nuclear fuel in a high-temperature, gas-cooled reactor is now underway here, with General Electric Co. (Gt. Britain), working under a U. K. Atomic Energy Authority contract, doing design and construction of a zero energy assembly for such an experimental reactor. Plans are to use a charge of uranium-233 and thorium for breeding uranium-233, under conditions of higher temperatures than have previously been used in the UKAEA's gas-cooled reactors.

Agreement for cooperation on the Norwegian Halden reactor project has recently been signed by U.K. Atomic Energy Authority and the Norwegian Institute for Atomic Energy. The project is concerned with an experimental reactor, scheduled to start operation early in 1958, which is designed to produce steam for wood-pulp mills and other industrial uses. Initial charge of uranium fuel elements will be supplied for the reactor by the Authority which will also work with the Institute on a research program to develop suitable fuel elements for later charges for the reactor.

New and larger uranium reduction plant is now being built at Springfields, near Preston, alongside the existing factory which has been in production for the U.K. Atomic Energy Authority since 1946. The new plant will use more continuous processes, to supply the larger demands of the expanding nuclear power program, with magnesium instead of calcium reduction being employed in the process.

RAW MATERIALS...prospecting, mining, marketing...

UNITED STATES:- For the first six months of 1957, the domestic uranium mining industry showed: (a) Twelve mills processed a total of 4,141 tons of uranium oxide, with five mills scheduled to go into production before the end of the year, and seven additional under contract or construction. Mill processing rate averaged 9,000 to 9,600 tons per day. (b) Mills and USAEC depots received 1.706 million dry tons of uranium ores. Upward monthly trend showed increase in receipts from 269,000 tons in January, 1957, to 301,000 tons in June, 1957. Ores processed totaled 1.694 million tons; uranium oxide content averaged 0.28%. (c) In stockpiles at end of period were 1.948 million dry tons, of which 448,000 tons were held by private companies and 1.498 million tons by the Government. (d) Reserves of mineable uranium ores are estimated at 67 million tons with average uranium oxide content of 0.27%. (e) Production bonuses for first six months of 1957 amounted to \$1,500,319.

CANADA:- Shipments of uranium ore to the Eldorado mill by Rix-Athabasca Uranium Mines have been averaging 100 tons daily, officials report. Under its Eldorado contract, Rix-Athabasca receives approximately \$6 per pound of contained uranium oxide; discussions are now underway toward possible renewal of the contract which expires early in 1958. The company, one of the pioneer ore producers of the Beaverlodge area, Saskatchewan, has shipped some 100,000 tons since operations started; management control is vested in Rio Tinto Mining Co. of Canada.

SOUTH AFRICA:- Some \$60 million has been invested through the Atomic Energy Board, S.A., in uranium extraction plants, and the auxiliary sulfuric acid production plants, according to J. A. Roux, research and planning director of the AEB. Dr. Roux estimated that with full production in all the uranium plants, South Africa's annual exports of uranium oxide will be valued at nearly \$50 million.

EXPERIMENTAL WORK...in the nuclear field...

NEW REACTOR:- Critical assembly experiments leading to development of a nuclear research reactor of unusual design and physical properties have begun at the San Diego, Calif., laboratory of the General Atomic division of General Dynamics Corp. Reactor cores will be tested at near zero power levels at the critical facility.

INSTRUMENT DEVELOPED:- Total body radioactivity counter, sensitive enough to measure naturally existing radioactivity in the human body, has been designed and developed by Gerald J. Hine, physicist in the radioisotope service at the Veterans Administration hospital, Boston. Believed to be the only one of its type in a U.S. hospital, its extreme sensitivity will enable study of radioactivity patterns in humans. It will also allow smaller dosages of radioisotopes to be used for diagnostic tracer purposes, because of this greater sensitivity.

NUCLEAR WEAPONS:- In the U. S., testing of nuclear experimental devices by the USAEC at its Las Vegas, Nev., proving ground continued, with the largest device of the current series detonated last week from a 700-ft. tower.... In the Soviet Union, testing of nuclear weapons has been resumed at the Siberian proving ground. A detonation of substantial size took place last fortnight at this testing station Britain will continue to use Australia's Maralinga range to test a variety of nuclear weapons, Duncan Sandys, British defense minister told the Anglo-Australian conference of defense planners last fortnight in Canberra, Australia. Mr. Sandys said that Britain intends to build up as quickly as possible an imposing array of nuclear and guided weapons.

MEETINGS, COURSES, CONFERENCES...on nuclear subjects...

OIL SYMPOSIUM:- Applications of Radioactivity in Petroleum Exploration and Production will be symposium dealing with research and instrumentation, field uses of radioactivity, and logging, to be held Nov. 6-8, Houston, Texas, under sponsorship of Tracerlab, Inc., Waltham, Mass., nucleonic products firm.

SOCIETY MEETING:- Scheduled guest speakers at the Oct. 28-30 meeting in New York of the American Nuclear Society include Henry D. Smyth, Princeton University; Lewis L. Strauss, Chairman, USAEC; and Sir Edwin Flowden, chairman, U.K. Atomic Energy Authority. The Society is meeting concurrently with the Atomic Industrial Forum, and the 1957 Trade Fair of the Atomic Industry.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

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